

## **The Impact of Renewable Energy on Gross Domestic Product in Sri Lanka**

A.M.M. Mustafa<sup>1</sup> and Abdul Jamal<sup>2</sup>

<sup>1</sup> *Department of Management, Faculty of Management and Commerce, South Eastern University of Sri Lanka*

<sup>2</sup> *Department of Economics, The New College, University of Madras, Chennai,*

<sup>1</sup>*amustafa@seu.ac.lk*

### **ABSTRACT**

**Purpose:** To investigate the influence of renewable energy consumption on Sri Lanka's Gross Domestic Product (GDP) from 2000 to 2023, focusing on whether renewable energy contributes significantly to economic growth.

**Methodology:** This study employs time-series econometric analysis. Key methods include the Augmented Dickey-Fuller (ADF) test for checking the stationarity of variables and Ordinary Least Squares (OLS) regression for examining the relationship between GDP and energy sources (renewable, coal, and oil consumption). Diagnostic tests, such as residual analysis, heteroskedasticity tests, serial correlation tests and CUSUM of square are applied to ensure the robustness of the model.

**Findings:** The analysis reveals that renewable energy consumption has a positive and statistically significant impact on Sri Lanka's GDP, indicating its potential as a driver of economic growth. In contrast, while oil and coal consumption also show positive associations with GDP, they are less impactful compared to renewables, underlining the strategic importance of renewable energy.

**Implications:** The findings suggest that Sri Lanka's policymakers should prioritize renewable energy initiatives, which can foster sustainable economic growth while reducing dependency on oil and coal. Strategic investments in renewable energy infrastructure can not only boost GDP but also help achieve environmental sustainability goals.

**Theoretical Contributions:** This research contributes to the literature by evidencing the specific impact of renewable energy on GDP within a developing country. It adds to energy-economics theory by quantifying renewable energy's role in economic models, emphasizing its unique benefits over non-renewable sources.

**Originality:** This study is among the few to comprehensively assess the influence of renewable energy on Sri Lanka's GDP over an extensive period, distinguishing it from similar studies by focusing specifically on renewable sources and their comparative economic impact.

**Keywords:** *Renewable Energy, Gross Domestic Product, Economic Growth, Time-Series Analysis*